AFB (Air Fan Bearing) Installation Guide

**AFB PARTS**

- **Bearing Housing**
  - Secured together with two 3/8 x 1.25 in. cap screws

- **Bearing Carrier**
  - Secured together with four #8-32 x .5 in. SHCS

- **Bearing Insert**
  - Each half secured to bearing carrier half with four #8-32 x .25 in. BHCS

- **Black Wiper Seals**
  - Secured together with o-ring cord
  (subsequently depicted as yellow for clarity)

- **O-Ring Cord**
  - Used in wiper seals (Ø.093 in. cross-section)

- **O-Ring Cord**
  - Used on bearing carrier around dowel pin (Ø.103 in. cross-section)
Equipment Check

1.1 Follow plant safety regulations prior to equipment disassembly:
   • Lock out motor.
   • Wear designated personal safety equipment.
   • Consult plant MSDS files for hazardous material regulations.

1.2 At the first installation of an ACHE (Air Cooled Heat Exchanger) bearing, disassemble fan shaft assembly in accordance with equipment manufacturer’s instructions and remove upper bearing arrangement. Retain upper bearing mounting bolts and/or nuts for ACHE bearing installation.

1.3 Check bearing assembly drawing for any modifications required to the equipment before installation.

1.4 Check shaft diameter, distance to the first obstruction, and bearing housing bolting to ensure they are dimensionally within the tolerances shown on the bearing assembly drawing. Check bolt length to ensure adequate thread engagement for the actual bearing housing.

1.5 Thoroughly inspect and clean the mounting plate and shaft or shaft sleeve. Inspect for corrosion or any defects. Remove all burrs, nicks, or scratches, and sharp edges from the shaft and/or sleeve in the bearing area. Remove sharp edges from keyways and threads. Replace worn shaft or shaft sleeve.

1.6 Check equipment requirements as described in Figure 1.6. Any reading greater than what is allowed must be brought within specifications.

1.7 Check mounting plate bolt holes and bolt circle to ensure they are the same as shown on the assembly drawing.

1.8 Inspect individual bearing components for any significant notches, scratches, or dings. The wiper seals, bearing insert, and spherical surfaces of the metallic components should be kept clean and free of debris.

1.9 Handle the ACHE bearing with care; it is manufactured to precise tolerances. The bearing surfaces are of special importance and should be kept perfectly clean at all times.

1.10 Tools needed for installation: An open-end wrench & torque wrench sized for the gland bolt nuts and hex head wrenches sized for the bearing housing and carrier bolts.

1.11 Retain nuts and bolts from the old bearing as they are needed for installation. All other fasteners that hold the ACHE bearing together are provided.
AFB Installation

2.1 The AFB will come packaged as partially assembled minus the wiper seals and o-ring cords installed. Begin by disassembling the bearing.

2.1.1 Remove the two cap screws from the bearing housing to access the insert assembly and set them aside for future reassembly.

2.1.2 Remove the four socket head screws securing the insert assembly together and set them aside for future reassembly. It is not necessary to remove the screws holding the bearing insert in the carrier.

2.2 Insert one end of the o-ring cord into the center of the cavity on one wiper seal. Continue insertion through another wiper seal but do not join the two. Wrap the wiper seals around the shaft with the antirotation tab facing up. Join the halves together with the remaining o-ring cord.

2.2.1 Repeat 2.2 for the other wiper seal. Have the anti-rotation tab facing down.

2.3 Vertically align the wiper seal’s anti-rotation tabs at a distance to match the inner diameter of the bearing insert. Position the lower wiper seal around 1 to 2 in. (25 to 50 mm) above the mounting plate.

2.4 Carefully position one half of the insert assembly onto the shaft to ensure full anti-rotation tab engagement. Please note that the small end of the insert assembly should point up while the larger end points down.
AFB Installation (Continued)

2.5 Using the dowel pins as guidance, mate the insert assembly half around the shaft and secure together with the four button head cap screws. Tighten button screws to a torque value of 20 in.-lbs (2.3 N-m). Be careful not to pinch the wiper seals corner; should assemble with ease if aligned properly.

2.6 With high-temperature grease, lightly coat the o-ring groove on the outside of the bearing carrier assembly. Insert the o-ring cord into the groove so that the ends meet at the anti-rotation dowel pin. The grease will help retain the o-ring cord in the groove.

2.7 Liberally coat the spherical end of the bearing carrier assembly with the high-temperature grease. Glide the bearing housing half without the pin slot around the bearing carrier assembly. Line up the bearing housing split with the bearing insert assembly split. The flat side of the bearing housing should point down.

2.8 Carefully place the mating half of the bearing housing around the bearing carrier assembly so that the dowel pin slides into the pin slot. Slight rotation of the bearing carrier may be necessary to achieve shaft alignment.
**AFB Installation (Continued)**

2.9 Secure the bearing housing together for full metal-to-metal contact using the two socket head cap screws. Tighten the cap screws to a torque value of 20 ft-lbs (27 N-m). The bearing housing should hold the bearing carrier assembly tight enough to maintain a fixed position, but also allow for some movement without requiring mechanical leverage.

![Figure 2.9](image1)

2.10 Slide and secure the complete assembly to the mounting flange for full metal-to-metal contact using the four hex head bolts. Tighten the bolts to a torque value of 25 ft-lbs (33 N-m). Ensure the bearing housing’s metal-to-metal contact remains unchanged from the previous step.

![Figure 2.10](image2)

2.11 Inject high-temperature grease straight into the grease port located on the bearing carrier assembly directly above the pin slot in the carrier housing. Fill the grease port with enough high-temperature grease to observe it escaping from the wiper seals. A flexible lubrication line must be installed to the grease port for greasing during operation.

![Figure 2.11](image3)

**Lubrication Instructions**

3.1 Flood the bearing with grease with observable overflow before initial startup.

3.2 Continue to lubricate the bearing each month with at least five pumps from a standard grease gun for optimal performance.

**Repair Instructions**

4.1 The AFB consists of seven replaceable components during service. Please inspect other components for damage as they are reusable.